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Addendum

Contribution by non-governmental organizations**

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I. Introduction

1. The issues for consideration by the Commission on Sustainable Development at its sixteenth session are closely interrelated and difficult to address in isolation. For example, decisions about land management (including agricultural management) can contribute to drought and desertification, while patterns of agricultural development can be responsible for water shortages, because agriculture is the largest user of water resources. Moreover, issues relating to land, drought and desertification are strongly interlinked. Land degradation and drought are contributing factors to desertification, and the priority approaches and strategies identified to address them are also relevant to desertification.

2. Although the issues are discussed separately in the present paper,[1] some common threads emerge across the themes on the need for increased input by and empowerment of the marginalized in decision-making processes and greater control by them over land and water resources; democratic processes that are participatory and inclusive; gender equity and equality; rights-based approaches to development, including the right of peoples and States to determine their own policies that protect food security, environmental quality and livelihoods; policy reform, including a shift to demand-driven policies that meet the needs of the poor; national and international policy coherence to implement sustainable development; increased global cooperation on sustainable development, including increased and coordinated investment and funding; cross-sectoral collaboration among donors, Governments, communities and civil society actors; management approaches that are based on biodiversity and agro-ecology and that take into account local knowledge; urgent and concrete action to address climate change; decentralized and democratized energy production; and action to tackle current unsustainable patterns of food consumption and production.

3. It is important to focus on the root causes of the problems, rather than on symptoms. Such root causes include the management of land for relatively short-term economic gains by a few people and the failure to make decisions democratically and in a way that takes into account economic, environmental, ethical and social aspects phenomena that have ripple effects across all of the sixteenth session themes. Likewise, climate change poses a direct threat to the achievement of the Millennium Development Goals and related objectives, including long-term food security, the provision of clean water, sanitation, clean air

[1] The present review paper was drafted by International Partners for Sustainable Agriculture (IPSA), the FoodFirst Information and Action Network (FIAN International), Practical Action, Environmental Liaison Center International (ELCI), the Drylands Coordination Group (DCG), the Freshwater Action Network (FAN) and the Third World Network (TWN). Subjecting a draft of the paper to the creative scrutiny and critical analysis of global non-governmental organization networks working on the themes for consideration by the Commission on Sustainable Development at its sixteenth and seventeenth sessions with a view to improving the content was a deliberate policy. The draft was circulated twice, in October and November, on major global list servers, and was made available to the larger global non-governmental organization community for comments and input. Nearly 25 substantive submissions were made per consultation phase. More than half of those submissions came from large global non-governmental organization networks representing all continents. TWN was responsible for collecting, systematizing and editing comments and input, and prepared both draft versions, and a third, final draft was circulated to the global community of non-governmental organizations early in December 2007.

and sustainable development. Its effects are felt across all of the sixteenth session themes, and urgent action and equitable solutions are needed.

II. Agriculture

4. Agriculture that involves the sustainable management of land and water resources is a key factor in meeting the targets of the Plan of Implementation of the World Summit on Sustainable Development (Johannesburg Plan of Implementation). Supporting agricultural practices that increase productivity and add value builds more sustainable livelihoods, while increasing women's agricultural productivity and capacity to receive fair compensation for work leads to greater gender equity.

A. Concrete action by non-governmental organizations since the adaptation of the Johannesburg Plan of Implementation

5. Non-governmental organizations have gained greater legitimacy in international processes dealing with agriculture, resource management and rural development. For example, a bureau with equal representation from Governments and civil society organizations administers the International Assessment of Agricultural Science and Technology for Development.[2]

6. Non-governmental organizations have explored new approaches to agricultural development that have cut across sectors (such as environment and energy), contributed to the generation and extension of agricultural knowledge and improved access to knowledge and other resources. Food sovereignty has become an overarching concept, articulated by the global peasant movement La Via Campesina. Progress has been made in organizing at the regional and global levels, emphasizing equity between poor and industrialized nations and promoting solidarity in international policymaking.[3] The rights-based approach to development focuses on empowering people to demand the protection and fulfilment of the full spectrum of their rights.

7. Non-governmental organizations have pioneered participatory research, planning and evaluation to improve and scale-up good practices and inform policy. The multi-stakeholder Sustainable Agriculture and Rural Development Initiative has resulted in collaborative efforts by non-governmental organizations and other major groups and has documented community efforts to achieve Sustainable Agriculture and Rural Development worldwide.[4]

8. Research supported by non-governmental organizations has focused on understanding and extending agro-ecological approaches to food production and creating and expanding local or regional infrastructures and networks that allow smallholders to add value to crops, gain fair access to markets and receive compensation above the costs of production. Agro-ecological approaches include organic agriculture,[5] sustainable livestock production, diversified production with

[2] http://www.agassessment.org.

[3] See http://www.foodsovereignty.org/new/.

[4] http://www.fao.org/SARD/en/init/, http://www.fao.org/sard/en/init/963/2952/index.html.

[5] See http://www.ifoam.org/about_ifoam/principles/index.html.

higher value crops and alternative crops that are water- and energy-efficient and under local control.

9. Livestock play an important but often neglected role. The documentation of good practices and policy options to address social, environmental, economic, public health and animal health and welfare issues is a priority. Non-governmental organizations promote a people-centred approach. The Kenya Livestock Working Group, for example, addresses the challenges of the Johannesburg Plan of Implementation related to hunger, land, water and rural development by identifying sustainable livelihood and landscape-scale good practices.[6]

B. Constraints and obstacles

10. The following constraints and obstacles have been identified:

(a) Climate change and the increasing vulnerability of poor populations and those directly dependent on natural resources;

(b) Water shortages and the increasing competition for fresh water. Without water productivity improvements, global water use will have increased by 70 to 90 per cent by 2050 if current trends continue;

(c) Nutrient imbalances leading to an increase in dead zones and potentially exacerbated by initiatives such as ocean fertilization;

(d) Harmful social, health, economic and environmental consequences of the industrial model of agricultural and livestock production, including genetic engineering. There has been insufficient support for local programmes promoting livestock husbandry and health and insufficient attention to livestock and livestock-based livelihoods;

(e) Rural-urban migration and its impact on rural areas, as well as poor conditions for workers in industrial production systems moving into rural areas;

(f) Concerns about food quality and the rising incidence of diet-related diseases and obesity;

(g) Increasing corporate concentration and control of value chains without shared benefits for producers and consumers and the treatment of agriculture solely as a market good;

(h) The failure to internalize social and environmental costs and the harmful impact of agricultural policies on the livelihoods of people dependent on agriculture;

(i) The negative impact of multilateral and bilateral trade agreements, especially for the rural and urban poor and small-scale and family-farm sectors in both developing and developed countries. This includes World Trade Organization rules preventing countries from developing their own agricultural and food policies;

(j) The negative impact of export subsidies in industrialized countries and the dumping of products below the cost of production in developing countries, undermining local markets;

(k) War and conflict over natural resources;

[6] http://www.sard-klwg.org/index.html.

(l) HIV/AIDS and the lack of access to treatment;

(m) The failure to adopt a human rights framework and strategy for hunger eradication;

(n) Poverty and the inability to make investments that increase productivity and resource-use efficiency.

C. Priority approaches and strategies

11. Resources and power should be shared more equitably. Food and fuel sovereignty is the key concept for decision-making about resource use. For example, agrarian reform is successful only if it empowers local communities and includes institutional reform. Technology transfers that involve shared ownership and control, and comprehensive multi-stakeholder assessments of their desirability, can alleviate hunger and poverty. If resources and power are to be shared, existing policies and practices of intergovernmental institutions will have to be revised and corporate control and concentration resisted.

12. It is important to build capacity, particularly at the local and regional levels. Improving access to and the availability of critical knowledge and resources requires the empowerment of people in local rural communities through training, transparency, new participatory governance mechanisms and partnerships. There is an urgent need in particular to developed the capacity to mitigate and adapt to climate change through agriculture, including by creating better early warning systems to monitor food supply and demand and coordinated response mechanisms. Particular attention should be placed on the development of youth capacity, encouraging young people to engage in social transformation.

13. Local, traditional and indigenous knowledge should be integrated with scientific knowledge. Community-based and indigenous approaches to food production have often been developed in response to local environmental and socio-cultural contexts and are thus more sustainable. Research must take local knowledge into account. People must be compensated fairly for any financial gains that accrue from research and development that uses locally generated technology or local seeds or breeds. There should be no biopiracy of genetic resources and associated traditional knowledge, including through patents. Community-based practices, such as switching to drought-resistant varieties of crops and reforestation, are invaluable in adapting to climate change.

14. Greater attention should be paid to food quality, health and preserving traditional foods. The slow food movement and anti-genetic engineering campaigns worldwide are reactions to mass-produced and mass-marketed food with low nutrient value and a lack of traditional value. They recognize the cultural significance of food and the importance of traditional foodways in safeguarding health. Such approaches contrast with those of corporate, governmental and non-governmental entities in many countries that promote the use of genetically modified organisms and undermine food sovereignty and food security. The preferential purchase of fair trade and local products at the consumer and institutional level supports small-scale producers and local agricultural landscapes, which play multiple roles, while facilitating a shift to more culturally appropriate and healthy choices.

15. Greater attention should be paid to agroecological approaches, diversifying agricultural production and protecting agricultural biodiversity, biodiversity and ecosystem services. Agro-ecological approaches to pest control, fertility management, energy production and water management can provide sustainable ecosystem services. These must meet landowner and community goals and are often facilitated by holistic management.[7] On-farm energy generation and nutrient provision through the recycling of livestock manure is more efficient and less likely to have negative effects than centralized industrial models using synthetic fertilizers. Paying producers to provide ecosystem services and protect biodiversity through agriculture can improve rural livelihoods while protecting the commons.

D. Mobilizing further action

16. Collaboration in planning, information, assessment and governance is essential. This includes fostering connections across sectors and interest groups not previously involved in agricultural practice and policy (for example, those relating to health care, labour and women), as well as in the context of shared governance mechanisms at the local and regional levels, such as food policy councils.

17. Reliable and credible sources of information must be developed. An evidence base of approaches that work and to which widespread access is guaranteed is necessary. This should include the establishment of an international agricultural technology assessment body with multi-stakeholder representation and the development and use of sustainable development indicators.

18. Exemplary models of sustainable agriculture, trade and rural development must be scaled up. Fair trade and similar systems ensure fair prices and wages for farmers and farm workers and promote environmentally sound practices and innovative value chains that redistribute profits more equitably. It is important to recognize successes and learn from mistakes, as well as identify alternative enterprises that can supplement agricultural income.

19. Advocacy to promote greater public investment in agricultural development should emphasize rights-based and participatory approaches, capacity-building, the empowerment of local communities and the realization of the right to food. The promotion of antitrust measures, increased competition and greater transparency in corporate practices can counter the trend towards increasing market concentration.

20. Agricultural and resource control policies that undermine food sovereignty, provide perverse incentives that degrade resources or exacerbate climate change, promote genetic engineering or discriminate against women or other vulnerable people need to be reformed.

III. Land

A. Constraints

21. Conflicts over land and natural resources are increasing. More than 3 billion people live in rural areas, many of whom are increasingly being violently expelled

[7] See http://www.holisticmanagement.org/n7/who_07.html.

from their lands and alienated from their sources of livelihood. Mega-development projects, such as large dams, and other infrastructure projects, including those associated with the extractive industries and tourism, have forcibly displaced local populations and destroyed their social fabric and the resource bases on which they depend. The current agro-fuel boom is likely to exacerbate existing problems, such as forced evictions, landlessness and land concentration and degradation. Conflicts over land and natural resources are likely to increase with climate change.

22. A combination of national policies and international framework conditions is responsible for driving peasant and indigenous communities to economic destitution. These include processes of deregulation and privatization of land ownership, which have led to the reconcentration of land ownership; the dismantling of rural public services and those that supported production and marketing by small and medium-sized producers; the fostering of capital-intensive and technologically advanced agro-exportation; and the liberalization of agricultural trade and policies relating to food security based on international trade.

B. Obstacles

23. Leaders of rural movements involved in conflicts over land and natural resources often face political persecution, harassment and death threats. Some have been killed. The right to organize collectively is difficult to exercise in many countries. The leaders of social movements are regularly subjected to arbitrary detention or killed. In many rural areas of the world, smallholder peasants are unable to obtain access to justice. Even if it is possible for them to do so, court procedures are often too slow to provide justice in a timely manner. Limited access by rural people to justice, together with the political power wielded by those responsible for human rights violations against them often result in impunity for such crimes.

24. Most armed conflicts today are fought in rural areas. Such conflicts often displace people and communities from their traditional lands, occupations and territories. Paramilitary groups and private security forces, which protect the interests of the powerful, are increasingly used in armed conflicts against civilians. In addition to insecurity and loss of life among peasant families, other widespread, equally devastating consequences of armed conflict prevent rural families from earning an income.

C. Priority approaches and strategies

25. Natural resources should be used primarily for food production. New agrarian reform must recognize the socio-environmental functions of the land, the sea and natural resources in the context of food sovereignty. Food sovereignty is based on the human right to food and to self-determination and on indigenous rights to territory, and implies policies of redistribution, equitable access and control over natural and productive resources by rural women, peasants, indigenous peoples, artisanal fisherfolk, rural workers, unemployed workers, pastoralists, communities that are subjected to discrimination, such as the Dalit, and other rural communities. It implies rural development policies based on sustainable land management, agroecological strategies centred on peasant and family agriculture and artisanal

fishing; trade policies against dumping and in favour of livestock-based livelihoods and peasant and indigenous production for local, regional and national markets; and complementary public sector policies, such as health care, education and infrastructure for the countryside.

26. Access to land is part of the right to adequate food and housing. It is critical that land and agrarian reform policies be adopted within a human rights framework aimed at hunger eradication. Legal instruments such as general comment No. 4 on the right to adequate housing, general comment No. 7 on forced evictions and general comment No. 12 on the right to adequate food of the Committee on Economic, Social and Cultural Rights and the voluntary guidelines to support the progressive realization of the right to adequate food in the context of national food security of the Food and Agriculture Organization of the United Nations provide guidance on how to implement a human rights approach to land issues.

27. Agrarian reform could put an end to the massive, forced rural exodus to the city. It would help provide a life with dignity for all and lead towards more broad-based and inclusive local, regional and national economic development that benefits the majority, and it could put an end to the unsustainable practices of intensive monoculture and industrial fishing. Agrarian reform is needed not just in the so-called developing countries, but also in the so-called developed countries of the North. The State must play a strong role in policies relating to agrarian reform and food production in order to guarantee the rights of various rural communities.

28. Historically, the concept of territory has been excluded from agrarian reform policies. No agrarian reform is acceptable if it is aimed only at the distribution of land. The new agrarian reform must include a "cosmovision" of the territories of communities of peasants, the landless, indigenous peoples, rural workers, fisherfolk, nomadic pastoralists, tribes, Afrodescendents, ethnic minorities and displaced peoples, who produce food and maintain a relationship of respect and harmony with the Earth, including the oceans. All peoples have the right to maintain their own spiritual and material relationships with their lands; to possess, develop, control and reconstruct their social structures; and to politically and socially administer their lands and territories, including the whole of the environment — air, water, seas, ice floes, flora, fauna and other resources — that they have traditionally possessed, occupied or utilized.

29. Gender equity is essential to genuine agrarian reform. The fundamental role of women in agriculture, fishing and the use and management of natural resources must be recognized. Women should have full equality of opportunity and rights to land and natural resources that recognize their diversity. Past discrimination should be redressed. Redistributive agrarian reforms should be implemented to allow women access to and jurisdiction over land and natural resources and guarantee the representation of women in decision-making mechanisms at all levels.

D. Mobilizing further action

30. Direct action in the form of peaceful land occupation and the recuperation and active defence of land, territories, seeds, forests, fishing grounds, housing, et cetera, are necessary and legitimate means of moving Governments to fulfil their human rights obligations and implement effective policies and programmes for agrarian

reform. Without the mobilization and full participation of social movements there will be no genuine agrarian reform.

31. Food sovereignty is more than just a vision; it is also the platform for a common struggle that allows rural and urban social movements to keep building unity in diversity. Alliances must be built with other sectors of society. For example, young people can play an important role in social change when their capacities are developed through education that builds an understanding of human rights, gender equality, sustainable development and the various facets of ethical behaviour.

IV. Rural development

32. Seventy-five per cent of the poor live in rural areas and depend directly or indirectly on agriculture for their livelihoods. Most are small-scale women farmers whose major role in agriculture and interest in rural development generally go unrecognized. In recent years, economic globalization has led to a narrow understanding of rural development, which has been seen in terms of economic development, market liberalization and markets for export. Such a definition neglects the important social, political and cultural dimensions and values that are the essence of rural lives and livelihoods and that offer alternatives for ending rural poverty.

A. Constraints and obstacles

33. Rural economies are based on a combination of subsistence and productive activities complemented by short- and medium-term strategies such as migration and paid labour. These are often indicators of exclusionary development processes that force the most vulnerable to look for alternatives elsewhere and do not necessarily translate into poverty reduction. That is because rural development policies are supply-driven, show limited interlinkages with poverty, hunger and trade policies and lack cross-sectoral coordination.

34. The poor and their livelihoods are directly dependent on biodiversity and ecosystem services. Yet the environmental degradation of fragile, marginal lands directly threatens the livelihoods of 250 million people, while a further 1 billion people are at risk. This is further threatening rural communities, increasing their vulnerabilities and reducing their adaptive capacities in the context of climate change.

35. Land and water resources management is essential for rural development. However, peasant farmers lack control of and access to land and water resources, and legislation to ensure such access and control is not properly reflected in agricultural and rural development policies and strategies. Gender imbalances in land ownership remain unresolved. Land reform, restitution and redistribution processes are complex, slow to be implemented and subject to biases that generally benefit the powerful.

36. Support for commodity food production for export is increasing. This may increase the efficiency and competitiveness of certain sectors, but it is not necessarily focused on the livelihoods and needs of the rural poor. Similarly, aid that focuses on market development without addressing poverty exacerbates existing inequalities. Production models that specialize in a limited number of export crops

may reduce the resilience of food producers to future adverse conditions and could have a negative impact on food security.

37. The privatization of agricultural extension services, particularly veterinary services, has failed to improve such services for poor and remote farmers. Impact studies indicate that farmers have to pay more, coverage is limited, since service provision to remoter areas is often not profitable, and the smallest farmers — mainly women — have no access to extension services, which are thus failing to reach the neediest.

38. Rural infrastructure options are not addressing urgent needs. While energy is recognized as critical to overcoming rural poverty, Governments seem to prioritize investments in grid electrification only. Although there may be scope to develop and extend electricity grids in developing countries, poor and dispersed rural communities rarely benefit from investments targeted at conventional energy options. Similar arguments apply to access to water supply for domestic and productive uses and appropriate forms of transport.

39. There is growing interest in biofuel development to assist rural development and reduce greenhouse gas emissions. In practice, the development by agribusinesses of biofuels, also known as agro-fuels, is taking precedence, despite the lack of a thorough analysis of agro-ecological and socio-economic conditions. Global evidence is emerging of key trade-offs for access to and control of natural resources that may affect the livelihoods of the poor, land rights and water use. Current biofuels produced in temperate zones can deliver only modest greenhouse gas savings, and at great expense in terms of land, with implications for food prices, biodiversity, water pollution, et cetera. Biofuels produced in the tropics have variable net impact, but several, including palm oil, inevitably involve the destruction of tropical forests. The land use changes driven by biofuels production must be taken into consideration.

40. There have been recent signs that greater attention is being paid at the national and international levels to rural development and agriculture, including the increased allocation of funding and investments. Through the Comprehensive Africa Agriculture Development Programme of the New Partnership for Africa's Development, countries have committed 10 per cent of national budgets to sustainable agriculture and rural development. Some countries, including Kenya, have developed plans focusing on community empowerment, decentralized management and enabling policies, but need concrete funding for implementation. Conversely, many country support strategies of African, Caribbean and Pacific countries allocate small percentages to food security and rural development.

41. Climate change increases the vulnerability of ecosystems, livelihoods and basic infrastructure. The production systems favoured in the context of current rural development may be severely affected if considerations relating to climate change and adaptation are not internalized in time.

42. International trade priorities direct local markets and rural development. There is a growing market for the export of raw natural resources as a result of the development of China, while efforts to increase market access, such as the economic partnership agreements of the European Union (EU), are increasing. Both trends will affect rural development, opportunities for Governments to promote the

diversification of livelihoods, national manufacturing capacities and the ability to protect local and regional markets from unfair and stronger competition.

43. Rural communities still lack a voice in policy formulation and decision-making processes relating to sustainable rural development.

B. Priority approaches and strategies

44. Community-driven development based on participatory prioritization and decision-making and resources management can strengthen social capital and contribute to rural poverty reduction. Demand-driven rural development policies and interventions could also facilitate the sustainable use of water, land, forest and fisheries resources and maintain biodiversity.

45. Farmers' control of land and water resources should be ensured. Some countries, such as Ethiopia, have taken measures to ensure land inheritance rights for both men and women. Support is thus required to improve institutions, capacities and outreach activities. Stronger political will is needed to ensure the implementation of internationally agreed approaches, such as the FAO guidelines on the right to food. Water resources management should be applied comprehensively and inclusively to address conflicting water uses and demands, especially those relating to irrigated agriculture.

46. Extension services should reach the neediest. Special programmes for remote and arid areas, such as the programme to develop arid and semi-arid lands in Kenya, and the integration of non-farm options are good examples of such services. Community-based extension that revalorizes and supports traditional knowledge systems and networks, with training for local farmer-to-farmer extension agents, is an alternative solution for the most vulnerable.

47. Infrastructure and energy options must be appropriate. Locally managed, decentralized energy systems can benefit rural areas and should be considered alongside grid options. Likewise, specific strategies on biomass and household energy are urgently needed. While small-scale locally controlled biofuel production could be an energy option for rural communities, comprehensive and inclusive risk- and impact-assessments would need to be undertaken for larger-scale agro-fuel production projects.

48. Rural development needs to promote an increased adaptive capacity to reduce vulnerability and increase the resilience of rural communities. National adaptation plans of action and climate change strategies need to be mainstreamed within rural development strategies. In vulnerable countries, climate data should be analysed, made available to local farmers on a yearly basis to allow appropriate planning and integrated into national policy frameworks.

49. International trade priorities must be reoriented. Operationalizing the principles of food sovereignty may provide countries with a different range of strategies to support pro-poor rural development in the context of international trade.

50. Integrating participatory mechanisms such as participatory market chain analysis and participatory technology development into infrastructure and market development can provide farmers with more technological options, facilitate

innovation and increase the confidence of the rural poor and marginalized so that they participate in planning and are given a voice in the process.

V. Drought

51. Drought is a normal, recurrent feature of climate. It occurs almost everywhere, although its features vary from region to region. Defining drought is therefore difficult; definitions vary according to regional differences and needs and disciplinary perspectives. Broadly speaking, a drought is an extended period of months or years when a region experiences a serious water deficiency. This generally occurs when a region receives consistently much lower precipitation than average. Although droughts can persist for several years, even a short drought, if intense, can cause significant damage and harm to the ecosystem and local economy, particularly in pastoral areas.

52. Between 1991 and 2000, drought was responsible for over 280,000 deaths and tens of millions of dollars' worth of damage. It has been projected that by 2025, the number of people living in water-scarce countries will have risen to between 1 billion and 2.4 billion — roughly 13 to 20 per cent of the projected global population. Africa and parts of western Asia appear to be particularly vulnerable.

53. Adequate strategies for the mitigation of drought could greatly reduce its impact. Recurring or long-term drought can result in desertification. Recurring droughts in the Horn of Africa have created grave ecological catastrophes, prompting massive food shortages. This phenomenon has been exacerbated by the weakening of traditional pastoral institutions.

A. Consequences of drought

54. Some climate models indicate that rainfall variability is likely to increase, pointing to more frequent and intense droughts. Whether drought results in an emergency depends on its impact on a given population. This, in turn, depends upon the vulnerability of a population's food production and, more generally, on its livelihood systems and how prepared they are to cope with climate variability.

55. Drought combined with low economic development is a common scenario in dryland areas. The economies of many African countries still rely heavily on agriculture and pastoralism. Any disruption of the agricultural/pastoral economy can cause shocks that reverberate throughout the system, affecting markets and pricing structures. In the medium term, they can adversely affect the balance of payments. National economies can be driven into recession, affecting even low levels of development. The resultant food insecurity becomes difficult to deal with, and further droughts worsen the problem. Factors other than drought must therefore be considered when looking at the causes and consequences of climate variability, particularly in developing countries.

56. Drought is a major cause of food insecurity, but the political climate, national and regional agricultural and rural development policies and practices, the state of watershed management and health and nutrition, among other issues, influence whether drought triggers a crisis.

57. The problem is especially complex because the issue that needs to be addressed is not lack of food but, rather, food entitlement — in other words, the lack of capabilities, such as earning income, which allow people to produce or acquire available food. There are many factors that affect capabilities. For example, there may be a deterioration in the quantity and/or quality of potential labour owing to HIV/AIDS. Even if labour is available, it may not be allocated to food production, as it may be more attractive at the household level to exit the rural economy for other opportunities. This could be the result of artificially low food prices caused by the importation of subsidized staples from developed countries. The process selectively removes the most capable people from the rural economy, although it may improve social safety nets through remittances and income diversification. Those populations that are more vulnerable to the impact of drought will be disproportionately affected. A drought mitigation strategy, therefore, must identify the most vulnerable groups, determine the reasons for their vulnerability, distinguish between those factors that can be addressed in the short, medium and long term and integrate action into the broader development agenda.

58. In 2005, parts of the Amazon basin experienced the worst drought in 100 years. Research shows that in its present form the forest could survive only three years of drought. This fact, coupled with the effects of deforestation on regional climate, shows that the rainforest is moving towards a tipping point at which it would irreversibly start to die, with catastrophic consequences for the world's climate.

59. Periods of drought can have significant environmental, economic and social consequences, including sickness and death among livestock, reduced crop yields, wildfires, desertification, dust storms (when drought hits an area suffering from desertification and erosion), malnutrition, dehydration and related diseases, famine resulting from lack of water for irrigation, social unrest, mass migration resulting in internal displacement and international refugees, conflict over natural resources, including water and food, reduced electricity production owing to insufficient available coolant and the increased incidence of snake bites.

60. The effect varies according to vulnerabilities. Subsistence farmers and pastoral communities are more likely to migrate during periods of drought because they do not have alternative food and fodder sources. Areas with subsistence farmers and pastoralists are thus more vulnerable to drought-triggered famine. Drought is rarely, if ever, the sole cause of famine; socio-political factors, such as widespread extreme poverty, play a major role. Drought can also reduce water quality, because lower water flows reduce dilution of pollutants leading to increased contamination of remaining water sources.

B. Drought mitigation strategies

61. The scope for mitigating the impact of drought is situation- and scale-specific. Drought affects both developing and developed countries, but mitigation capacities differ considerably. Developed countries can invest in systems to mitigate drought and have strong institutional frameworks that effectively provide collective insurance for coping with drought. The livelihoods of the majority of the population do not depend directly upon the amount of rainfall or the short-term state of the environment. Furthermore, the relative wealth of the urban economy allows for the subsidization of the rural population when necessary. In developing countries this is

rarely the case; a large percentage of dryland populations depend directly on the natural resource base, which is often degraded, and typically lack alternatives and have limited social safety nets to ensure food security.

62. The following strategies may reduce the impact of drought:

(a) Drought monitoring and information. Continuous observation of rainfall levels and comparisons with current usage levels can help prevent man-made drought. Careful monitoring of moisture levels can also help predict increased risk of wildfires. This information must be effectively conveyed to the local population;

(b) Land use. Carefully planned crop rotation can help minimize erosion and allow farmers to plant fewer water-dependant crops in drier years;

(c) Conservation agriculture. Green water can be managed in rain-fed areas;

(d) Rainwater harvesting. Rainwater from roofs or other suitable catchments can be collected and stored;

(e) Recycling water. Former waste water (sewage) can be treated and purified for reuse;

(f) Water restrictions. Water use can be regulated (particularly outdoors) and water conservation devices fitted inside the home;

(g) Cloud seeding. This is an artificial technique to induce rainfall.

63. It is also crucial that the United Nations Convention to Combat Desertification be implemented (see sect. VI below). This is the main international legal instrument to address land degradation, drought and desertification.

VI. Desertification

64. Desertification has been described as land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities and as the reduction or loss of biological or economic productivity of drylands.[8] Desertification is both an environmental and a developmental problem which directly affects an estimated 250 million people worldwide.

65. Climate change is hitting the most vulnerable populations hardest, including farmers and agro-pastoral and pastoral people who inhabit some of the driest areas in the world. Emphasis needs to be placed on exploring what this implies in terms of impact and vulnerability, what adaptation in drylands means for different sectors and how to build resilience. International mechanisms relating to adaptation are important, as are other development imperatives, such as poverty reduction and disaster risk reduction.

A. Constraints

66. Desertification is not widely understood. Indeed, it is usually misunderstood as the spreading of deserts through either natural or human causes and as a phenomenon

[8] See *Ecosystems and human well-being: Desertification Synthesis*: a report of the Millennium Ecosystem Assessment (Washington, D.C., World Resources Institute, 2005).

that occurs only in desert areas. Such an understanding is very limited and tends to highlight the natural aspects of the problem and place less emphasis on the human causes and consequences. The misunderstanding also leads to difficulties in measuring its extent and impact.

67. There is a distinct lack of investment by Governments and donors in dryland areas, as they are perceived as being poor in terms of biodiversity and are usually inhabited by poor, marginalized people. The contribution of drylands in terms of national economies is similarly poorly understood. Moreover, desertification has long been misunderstood as a problem exclusive to the South. The consequences of climate change and the increase in migration from dryland areas of Africa to European countries has nevertheless forced Governments in the North to recognize the effects of desertification. Data is needed to show such Governments and donors the consequences of desertification for the security and economies of their countries.

B. Obstacles

68. Increasing climate instability will make rural people more vulnerable in terms of food production, shelter and access to water, and it will also make development activities more challenging. Data gathered on dryland areas may already be obsolete and new aspects of the situation necessitate a reconsideration of development and emergency plans. Climate change is thus a major obstacle to implementing Agenda 21 and reaching the Millennium Development Goals.

C. Priority approaches and strategies

69. There is a need to demonstrate the value and importance of drylands in economic, environmental, social, cultural and political terms. Data must be obtained and provided to decision-makers on the value of drylands, in terms of agricultural and livestock production, tourism, et cetera.[9] The environmental services of drylands need to be adequately valued and their importance in terms of biodiversity recognized. Livestock keepers' rights and the roles of pastoralists also need to be respected and adequately valued.

70. The role played by desertification in climate change as well as the consequences of climate change for drylands must be seriously considered and action taken. The role of land degradation in increasing conflict between agriculturalists and pastoralists needs to be acknowledged. Access to land and ownership of natural resources must be guaranteed, securing local control of vital livelihood factors. The marginalization of dryland peoples must be addressed. Finally, the costs of failing to act to prevent the degradation of drylands need to be fully examined.[10]

71. Increased collaboration among all actors involved in development projects in drylands, combined with increased investment, will enable land degradation to be combated efficiently. Identifying the various actors, mapping their activities and tracking the flow of funds invested in dryland areas and activities to combat

[9] This is being done by, for example, the World Conservation Union.

[10] The French Scientific Committee on Desertification has already started evaluating the economic costs of non-action in terms of combating desertification (see http://www.csf-desertification.org/dossier/dossier2_5.php).

desertification is a first step. The Paris Declaration on Aid Effectiveness should be used to pressure the Governments of affected countries to mainstream desertification into national development plans and to substantially increase investment.

72. Given the increasing variability of the climate, activities should focus on strengthening local adaptive capacities, including the use of traditional knowledge, and supporting pastoralist lifestyles, which are adapted to harsh environments and often provide local solutions for reversing land degradation. Other approaches include promoting the natural regeneration of tree species by local farmers, adopting integrated crop-production systems (including with crops adapted to drylands), creating a market for sustainable and fair-trade dryland products, developing microcredit programmes, especially those targeted at women, increasing the efficient utilization of water and adopting a rights-based approach to the issue of access to food, land and water. Decentralization policies and land rights also need to be properly addressed.

73. The United Nations Convention to Combat Desertification, as the main international legal instrument for addressing land degradation, drought and desertification, needs to be implemented. It is already in force and has been ratified by 190 countries, and provides an opportunity for Governments to adopt reforms.

D. Mobilizing further action

74. The issue of desertification has been to a certain extent ignored and viewed in isolation. Investment in drylands activities, such as water and land management, pastoralist development initiatives and the protection of savannah ecosystems, has been minimal and uneven. Awareness-raising and information work is crucial, and Governments and donors must be engaged on the issue. Civil society, including farmers', pastoralists' and women's organizations, should coordinate efforts and put sufficient political pressure on regional and national authorities.

75. There is clearly a risk that the strong demand for extraordinary efforts to combat carbon dioxide emissions resulting from the destruction of forests and wetlands may divert most available funds for land and ecosystem management towards humid forests and thus further reduce available resources for drylands management and development activities in arid and semi-arid regions.

76. In terms of the Climate Change Convention, more action could be mobilized towards the implementation of the new 10-year strategic plan. The sixteenth and seventeenth sessions of the Commission on Sustainable Development will provide an opportunity for civil society to unite efforts and work on activities that cross-cut the Rio conventions. Concerns relating to climate change could be used to increase focus on and interest in activities to combat desertification, as that phenomenon occurs in areas where people are very vulnerable to climate change. Improved technologies and best practices, such as solar electrification, are interesting investments, both with regard to development in dryland areas and climate change mitigation.

77. If people are to engage further on the issue, there will have to be a change in the way in which they understand and view desertification and drylands. That could be accomplished by publicizing success stories and disseminating best practices, especially those that stem from people living and working in drylands.

VII. Water and sanitation

A. Evaluation of progress

78. There is a global water and sanitation crisis[11] affecting the most vulnerable people in society, particularly women and children. The Johannesburg Plan of Implementation prioritizes water for basic human needs, yet available water resources continue to decline owing to the excessive withdrawal of surface and ground waters and pollution, coupled with decreased precipitation and increased evaporation as a result of the changing climate.[12] Globally, the quantity and quality of available drinking water is deteriorating. UN-Water predicts that by 2025 1.8 billion people will be living in regions of water scarcity and two thirds of the global population will be living in regions with water stress.[13] This will have an impact on society in all its aspects, especially those relating to agriculture, which uses 80 per cent of available water resources.

79. Progress in the area of sanitation is very slow. The international target of halving the proportion of people without access to sanitation by 2015 will not be met; 74 countries worldwide are off track, and the target will not be met in sub-Saharan Africa until at least 2076.

80. Although there has been global progress on access to drinking water, the Joint Monitoring Programme for Water and Sanitation of the World Health Organization (WHO) and the United Nations Children's Fund reported in 2006 that that trend appeared to be deteriorating and there were stark regional variations. Coverage rates in sub-Saharan Africa are the lowest, at an estimated 56 per cent of the population. The provision of water and sanitation to poor people in urban areas is problematic owing to population density, pollution, land tenure and complex institutional frameworks.

B. Constraints and obstacles

81. The water and sanitation sector suffers from chronic underinvestment and political neglect. Investment has failed to keep up with overall increase in aid and the sector is not properly recognized as fundamental to the achievement of the Millennium Development Goals, particularly in the areas of health and education.[14] In Mali, for example, the 2005-2006 aid budget for health was nearly double that for water,[15] and in Malawi, the health budget was 15 times greater than that for the water sector. Moreover, donors are not giving priority to the poorest nations. Of the top 10 recipients of aid to the sector in 2005, only two — Bangladesh and Nigeria — were low-income countries.

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[11] See United Nations Development Programme (UNDP), *Human Development Report 2006: Beyond scarcity: power, poverty and the global water crisis*.

[12] See United Nations Environment Programme, *Fourth Global Environment Outlook*, 2007.

[13] Ibid.

[14] In countries with high child mortality rates, diarrhoea accounts for more deaths in children under 5 years of age than any other cause of death — more than pneumonia and more than malaria and HIV/AIDS combined. In Nigeria, parents withdrew their daughters from school because they had to defecate in the open. In Uganda, 94 per cent of girls reported problems at school during menstruation and 61 per cent reported staying away from school during menstruation.

[15] WaterAid, *"Global cause" and effect*.

82. Collective international responsibility and coordinated action needs to be further strengthened. UN-Water represents a step towards a more coherent approach. The EU Water Initiative provides a platform for donor cohesion within the EU, although its impact has been reduced because of weak political will. The annual global monitoring report of WHO is a positive step, but it is essential to ensure that that is not just a one-off exercise and that its findings are used to drive real change.

83. Developing-country Governments have a key role to play in accelerating progress. National public spending on water and sanitation typically represents less than 0.5 per cent of gross domestic product.[16] Although the issue of water and sanitation is beginning to be recognized in poverty reduction strategies, it is not necessarily reflected in national budgets, which, themselves, do not necessarily ensure effective spending.

84. Water and sanitation are consistently identified as priorities by poor people who participate in poverty assessments, yet the response from donors and national Governments has been weak. Many countries suffer as a result of the breakdown or underdevelopment of social contracts between the State and citizens, leading to an accountability gap, which allows corruption to persist.

85. There is a particular lack of attention to the issue of sanitation. The Global Water Partnership estimated in 2000 that only $1 billion was being spent in developing countries on sanitation, compared with $13 billion on water.[17] Sanitation is in crisis because of an absence of political will at both the national and global levels. The sector is a shambles — responsibility for sanitation is often shared across Government departments, which are unable to make a coherent case for addressing sanitation needs.

86. Other barriers to progress include inaccurate information that hampers assessments of the scale of needs, confusion about which approaches to follow and a tendency to underestimate the behavioural changes needed. There is a limited perception of sanitation as the provision of toilet facilities only. Resources should be targeted at addressing key barriers rather than spent on subsidized latrine-building.

87. Progress is further obstructed by limits in terms of choice, availability, adequacy, control and standards of the technologies promoted as part of the prevalent delivery-oriented private-sector policy approach.

88. Insufficient attention is being paid to the implementation of national integrated water resources management policies, which is constrained by significant institutional, scientific and behavioural barriers to integration. Furthermore, politicians are struggling with the technocratic nature of those policies.

C. Priority approaches and strategies

89. The *Human Development Report 2006* estimates that international aid to the water and sanitation sector needs to be doubled and that donors need to rebalance their investments across sectors to mainstream water, sanitation and hygiene into health, education, urban, rural and other relevant development strategies. Governments should have integrated investment strategies for essential services that

[16] UNDP, op. cit.

[17] Global Water Partnership, Framework for Action (2000).

recognize the interrelated nature of health, education, water and sanitation. Aid should be targeted at the countries most in need, and donors should work with Governments to ensure that all national plans for water and sanitation are fully funded.

90. Given that most investment in the sector is made by the international financial institutions, they should always be informed by comprehensive poverty and social impact assessments.

91. International coordination must be strengthened. Initiatives such as UN-Water, the EU Water Initiative and the WHO annual global monitoring report need proper financial support and clear delivery objectives. Existing initiatives should be effectively networked to make best use of limited resources. A global action plan for water and sanitation, setting out a comprehensive strategy for ensuring progress and monitored by one global task force, merits serious consideration.

92. There must be policy coherence at the national level. Ministries responsible for water and sanitation need to lead the development of investment plans and move towards a sector-wide approach. Donor coordination is strengthened through such efforts, of which there are excellent examples in Bangladesh, Uganda and the United Republic of Tanzania. Given the trend towards administrative decentralization and the increased role of local government in water management and sanitation services, lessons from local government campaigns should be internalized and strengthened.[18]

93. Poor people need opportunities and mechanisms that allow them to hold their Governments and service providers to account. Governments and service providers must be accountable to the people they serve, especially the poor. Non-governmental organizations have a valuable role to play in empowering civil society through capacity-building, supporting citizens' engagement in ongoing dialogue, planning, decision-making and negotiation.

94. The right to water and sanitation was set out in general comment No. 15 of the Committee on Economic, Social and Cultural Rights and, reaffirmed by the Human Rights Council[19] and by the Office of the United Nations High Commissioner for Human Rights in August 2007. Incorporating the right to water and sanitation into national laws, backed up by specific measurable plans, will build accountability and political will. Access to safe, affordable water and sanitation then becomes an entitlement around which all people, including women, children and the poor and marginalized, can mobilize. However, even where the right to water is legally recognized, poor people may still need access to justice in order to protect them from being illegally cut off.

95. Inclusiveness and social mobilization result in effective partnerships. Changing from the traditional delivery-oriented approach to one that internalizes the demands and voices of the poor results in the scaling-up of successful, sustainable, targeted and, often, cheaper community-driven approaches that also contribute to the building of accountability and effectiveness. The Agua Tuya initiative in Bolivia and the work of the municipal council in Kitale, Kenya, are good examples of such approaches. This requires major changes in the way service providers, Governments and investors work, but there are good examples in the developing world.

[18] Such efforts include the water campaign of ICLEI and the work of the United Cities and Local Governments Committee on water and sanitation and of national local government associations.

[19] Human Rights Council decision 2/104 on human rights and access to water.

96. A concerted approach must be taken to the issue of sanitation. The neglect of sanitation needs to be reversed. Senegal set an example in 2004 by becoming the first country to establish a ministry for prevention, public hygiene and sanitation, to coordinate sector activity. Positive political will is being generated by the United Nations International Year of Sanitation. Civil society has a mobilizing role to play. In Bangladesh, a community-led Total Sanitation campaign changed the political will of the Government, which has recognized the right to water and sanitation and agreed to fund a target of 100 per cent sanitation by 2010. Coverage in Bangladesh has grown from 33 per cent in 2003 to 81 per cent in 2006, and the country is playing a leadership role in the region.

97. While new infrastructure will be needed if targets are to be achieved, equal importance should be given to investing in the repair and maintenance of existing infrastructure. Likewise, the contribution that water and sanitation technologies make to the achievement of other development objectives needs to be more widely acknowledged. Simple technological approaches that have had a broad impact include the building of community sand dams in the Sudan as a means of conflict resolution; rainwater harvesting to ensure food security and empowerment, which has been used successfully by the Water for Food Movement in South Africa; gender-responsive school latrines in India and Africa, which have had an impact on girls' school attendance; terrace cultivation in arid regions of Africa and Latin America to improve the use of scarce water resources; micro-hydroelectricity generation; and more integrated initiatives, such as the Nyamarimbira integrated water project in Zimbabwe.

98. Integrated water resources management policies need to be operationalized. Road maps for planning and implementation can be a way forward. Every river basin and watershed needs an integrated water resources management plan that empowers civil societies and the poor, enabling them to have an input in water governance, and that prioritizes demand management. National standards and principles for the allocation of water among competing users must be established. There is a need to deepen understanding of the methods used to measure sustainable water resource use, such as assessment of water footprints and virtual water and consideration of specific hydrology of rivers.

99. Recent water reforms in Kenya, Mexico, Nicaragua and South Africa have recognized the environmental and social needs of rivers and include new allocation and rights regimes to manage water resources and incorporate water users. Other countries, including Costa Rica, Guatemala and Honduras, are attempting to reform their water laws.

D. Future challenges

100. The following emerging and future challenges have been identified:

(a) **Climate change.** Water is the key to climate change adaptation. We should focus on the management of ground and surface waters, working at the community level to build resilience to floods and drought. Rainwater harvesting has potential for water-stressed areas and should be mainstreamed into national and regional policies;

(b) **International waters.** In all, 263 rivers cross international borders, but 157 are not covered by cooperation agreements between States. The Convention on the Law of the Non-navigational Uses of International Watercourses sets minimum standards for the peaceful management of international rivers, but it has been ratified by only 16 countries and is not yet in force. Without a universal set of principles, the management and allocation of international waters becomes dominated by the largest economy in the river basin, and decisions are driven by political forces that do not benefit people or respect environmental principles. Vast groundwater aquifers on every continent are being mapped and analysed, but much more work remains to be done;

(c) **Urbanization.** Rapid urbanization is putting considerable pressure on water and sanitation services, which, if not addressed in time, will make the achievement of the Millennium Development Goals unfeasible;

(d) **Infrastructure projects.** Major water infrastructure projects must be consistent with the guidelines of the 2000 World Commission on Dams, and multi-stakeholder consultations need to be encouraged in all nations and regions. Large water infrastructure projects are re-emerging at the global level;

(e) **Agricultural changes.** An increase in agro-fuels production will seriously affect water resources.